NUTRIENT MANAGEMENT PLANS

Nutrient management plans are written to optimize nutrient use by plants and reduce nonpoint source pollution. A plan is site-specific; it identifies how the major nutrients (nitrogen, phosphorus and potassium) are managed for optimum crop production and water quality protection.

The goal of nutrient management planning is to minimize adverse environmental effects of nutrient applications by maximizing the efficient use of those nutrients by crops. This is accomplished through careful evaluation of many criteria. The rate of nutrients needed is determined by evaluating the yield potential of the field based on farmer yield records or the soils in the field. The soil's ability to store and supply nutrients and the demand for nutrients based on the crop's stage of growth are considered in determining the best time for application.

FINANCIAL AND TECHNICAL ASSISTANCE

Financial and technical assistance for rotational grazing is available through your local soil and water conservation district and Natural Resources Conservation Service.

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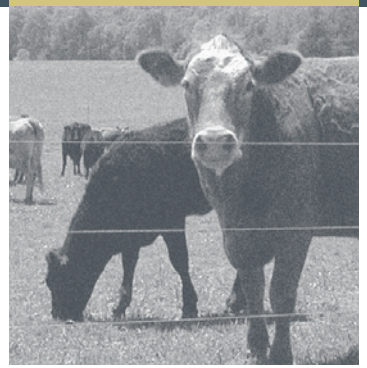
NUTRIENT MANAGEMENT

FOR PASTURES



IMPORTANT STEPS FOR MANAGING PASTURE

UTILIZE ROTATIONAL GRAZING

Grass is managed to maintain optimum growth and nutrition through rotational grazing. Under continuous grazing, animals graze selectively, eventually eliminating the most desirable plant species. This leads to more runoff and erosion in overgrazed areas. Rotational grazing considers plant development, the time animals are on pasture and the time pasture is rested between grazings. This allows pastures to recover more quickly. Rotational grazing can:

- **Increase pasture production by maintaining grass in its most nutritious stage.**
- **Improve weed control by reducing selective grazing.**
- **Decrease the need for purchased fertilizer by distributing animals and their manure more evenly.**

The key to good pasture management is using livestock to manage grass growth. For a pasture to be most productive, grass needs enough leaf surface to optimize re-growth, but not so that it is allowed to produce a seed head. Livestock should be rotated through pastures to maintain this condition.

After a pasture is grazed, it needs a rest period for regrowth. The goal should be to graze a pasture down in seven days or less, then allow approximately 15 days rest in spring and 30 days rest in summer. Pastures not needed for grazing in the spring can be harvested for hay. Be sure to provide a reliable water source for each pasture. Even high quality pasture areas will not be used often if they are too far from water. Place salt in under-utilized areas of pasture to encourage livestock to spend more time there.

SOIL TESTING

Have soil tested to be sure that pH, phosphorus, and potassium are not limiting plant growth. Generally, apply lime to maintain a soil pH of at least 6.0. Lime can be applied any time of the year.

Cool season grass pastures should be fertilized in the fall. Low phosphorus is a common fertility problem on Virginia's pastures. Applying phosphorus encourages growth of white clover. Grass growth will be stimulated by the nitrogen “fixed” by the growing clover. Clover is also high in feed value and improves the intake and digestibility of the pasture. Clover is especially important in tall fescue pastures to improve livestock performance.

Since very small amounts of phosphorus and potassium are actually removed from the pasture by grazing animals, soil fertility levels remain fairly constant once they are built up. This is an important factor when considering the economics of pasture fertilization. In deciding how much nitrogen to apply, the decision should be governed by the percentage of clover in the stand, the need for additional grazing, stocking pressure on the pasture and type of livestock grazing the pasture.

ROTATE FEEDING AREAS

Feeding areas frequently turn into denuded mud holes during winter. This can lead to erosion, nutrient loss and animal health problems. To prevent this, feeding locations should be moved frequently. Portable feed troughs can be utilized for loose feed. If you are using hay rings, move them after each bale. Even better, round hay bales can be unrolled on pasture in different locations each day. This helps distribute nutrients throughout the pasture and can decrease waste.

Winter feeding costs, particularly for beef cattle, can be greatly reduced by utilizing winter grazing. Tall fescue is well suited for winter grazing since it responds well to late summer fertilization, withstands heavy grazing and retains its quality during the winter.

BMPs

BMPs and efficient nutrient management on swine operations allow you to improve profitability while protecting surface and ground water for you and your neighbors. Among other elements, a nutrient management plan - itself a BMP - includes:

- **A detailed site map.**
- **Information about managing manure application to fields and environmentally sensitive areas.**
- **Soil test details and nutrient application rate calculations for each field.**
- **Details about soil types and potential productivity.**
- **An analysis of manure.**
- **Details about manure storage capacity and land application requirements.**
- **A schedule for manure application.**

A nutrient management plan enables you to get the most yield from any nutrient source you apply. Using manure and supplemental fertilizer efficiently by considering proper timing and placement at the correct rate can improve your bottom line while minimizing any negative impacts to the environment we all depend on.

FINANCIAL AND TECHNICAL ASSISTANCE

The Virginia Department of Conservation and Recreation (DCR), soil and water conservation districts, and the Natural Resources Conservation Service have programs to assist swine growers wishing to install BMPs to better manage waste and protect soil and water resources. For technical and financial assistance that may benefit your operation, contact one of these offices. The Virginia Agricultural Cost-Share Program includes BMPs, such as animal waste control facilities, nutrient management plan writing, implementation and record keeping, and management of organic nutrient applications using a pre-sidedress nitrate test.

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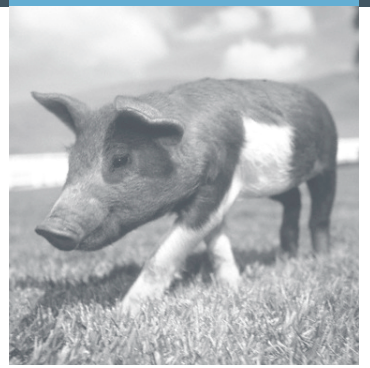
NUTRIENT MANAGEMENT AND BMPs

FOR SWINE



MANURE TESTING

Manure testing is vital to any nutrient management system and is required on swine farms that are required to have a Virginia Pollution Abatement (VPA) permit. Manure's nutrient content varies widely from farm to farm depending on the type and age of your swine facilities, feed rations and manure handling-storage system. To encourage manure testing, DCR funds this program in Virginia, so there is no cost to the farmer.

Manure should be tested at least once a year, and large operations (2,500 or more swine, each weighing at least 55 pounds) must be sampled twice annually.

THE NUTRIENT MANAGEMENT PLAN (NMP)

Nutrient management plans detail the most efficient use of manure and fertilizer for your farm. Plans are customized and site-specific. Soil types and productivity potential are identified for each field, and an inventory of nutrients from the soil, crop residues, manure and commercial fertilizer is conducted.

This information is combined into a flexible, easily understood document in which the proper rate, timing and placement of nutrients are specified. Environmentally sensitive areas are identified and recommendations are provided to ensure efficient nutrient use. Best management practices (BMPs), such as splitting nitrogen applications, banding starter fertilizers, sidedressing applications per soil nitrate test results, and soil sampling, are prescribed to guide nutrient usage decisions.

In addition, potential phosphorus loss must be evaluated. Potential phosphorus runoff relates directly to slope and soil erosion, existing nutrient levels in soils and nutrient application rates. Also, potential phosphorus loss through subsurface or tile drainage impacts shallow ground water.

CALIBRATION

Calibrating application equipment is also vital to efficient nutrient use and plan implementation. Applying the correct rate of manure assures compliance with your nutrient management plan and, if applicable, a VPA permit. A DCR nutrient management specialist has the equipment and expertise to calibrate your application equipment and assist you in implementing your NMP.

PSNT

WHO OFFERS NITRATE TESTING SERVICES?

The Virginia Department of Conservation and Recreation (DCR), through its Nutrient Management Program, has approved soil testing laboratories that can provide soil nitrate test analysis. Your planner may have access to a field test kit, which is used to analyze soil samples and determine nitrate test results in a timely manner. In either case, use this procedure to get the most out of all organic nitrogen sources applied to your crop.

DCR has field nitrate test kits in its regional watershed offices. DCR staff can also provide you with results to use in adjusting sidedress rates recommended in your nutrient management plan.

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PRE-SIDEDRESS NITRATE TEST

Estimating available nitrogen from past manure and biosolids applications can increase your bottom line.

P S N T

What is a Pre-Sidedress Nitrate Test (PSNT) and when is it conducted?

This test is used to measure how much soil nitrate-nitrogen is available to a corn crop at nitrogen sidedress time. It is a soil sample taken when corn is from 10 to 15 inches at the whorl as it stands, not to the tallest part of the plant. This is when corn begins its most rapid growth.

What benefits does soil nitrate testing provide?

Nitrate testing verifies the available nitrogen from previous manure or biosolids applications. Nutrient management planners use this information to save you money by reducing the sidedress rate of commercial nitrogen recommended in your plan.

How is the nitrate test conducted?

Nitrate-nitrogen levels in the soil are determined with a portable soil nitrate test kit or by an approved soil testing laboratory. Soil samples for a PSNT should include 10-20 soil cores from each field taken to a depth of 12 inches. Samples should be taken between the rows to avoid starter bands and areas where roots have depleted nitrogen.

How are PSNT results used?

Sidedress nitrogen recommendations are based on a set of guidelines developed through extensive research.

The guidelines are:

NO_3-N_{PPM}	**Nitrogen application**
>20	No sidedress nitrogen needed
11-20	25-50 percent reduction possible in sidedress nitrogen rates, depending on field history
<11	Apply sidedress nitrogen rate as recommended in the nutrient management plan

Where should you consider nitrate testing?

Perform PSNT on corn fields that received significant manure or sludge applications prior to planting. Additionally, for best results, fields should have received no more than a starter rate of nitrogen (25-30 lbs per acre) at or before planting.

THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION

NUTRIENT MANAGEMENT PROGRAM

The use of nutrient management plans optimizes plant nutrient usage and reduces nonpoint source pollution. A nutrient management plan is a written, site-specific plan identifying how major plant nutrients (nitrogen, phosphorus, and potassium) are managed for optimum crop production and for the protection of water quality. The goal of this planning is to minimize adverse environmental effects and avoid unnecessary nutrient applications.

The Virginia Department of Conservation and Recreation oversees programs that address nonpoint source pollution. When farm fields and urban lands lose nutrients and sediment they can enter our ground and surface waters, causing nonpoint source pollution.

DCR has a professional staff of nutrient management specialists located throughout the Commonwealth who can develop a nutrient management plan that will help you efficiently manage nutrient applications. Call a specialist in your area to discuss how you and the environment will benefit by implementing a nutrient management plan.

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DCR REGIONAL OFFICES

Upper Tennessee and
Big Sandy Watersheds
Abingdon (276) 676-5529

Roanoke Watershed
Clarksville (434) 374-3648

New River Watershed
Dublin (540) 643-2590

James Watershed
Richmond (804) 225-4468

Shenandoah Watershed
Staunton (540) 332-9991

York/Rappahannock Watershed
Tappahannock (804) 443-6752

Albemarle, Chowan and Coastal Watersheds
Suffolk (757) 925-2468

Potomac Watershed
Warrenton (540) 347-6420

Your local DCR nutrient management specialist is:

BUSINESS CARD